

Communication and Collaboration Infrastructure

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December 13, 2005



*Argonne National Laboratory is managed by
The University of Chicago for the U.S. Department of Energy*

APS Computer Communications

- The Scientist need to communicate/collaborate
- Their tool of choice: The desktop computer
- The desktop computer relies on the APS Server/Network infrastructure

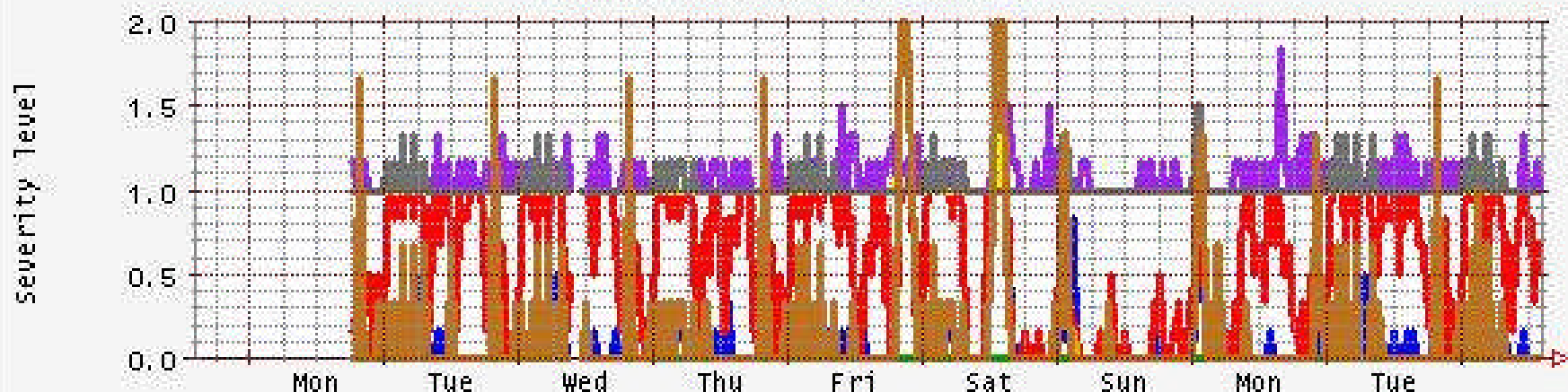
Systems Management: The brains behind the server

- Automated OS and patch deployment to 376 Solaris clients
- APS developed tools and software packages to configure systems and load software
- A reproducible system is a manageable system.

Watching System Usage

- Systems need to be monitored to track future needs and troubleshoot suspected problems.
- Orca: A tool for collecting/graphing Solaris OS data.

Weekly hill System Overview



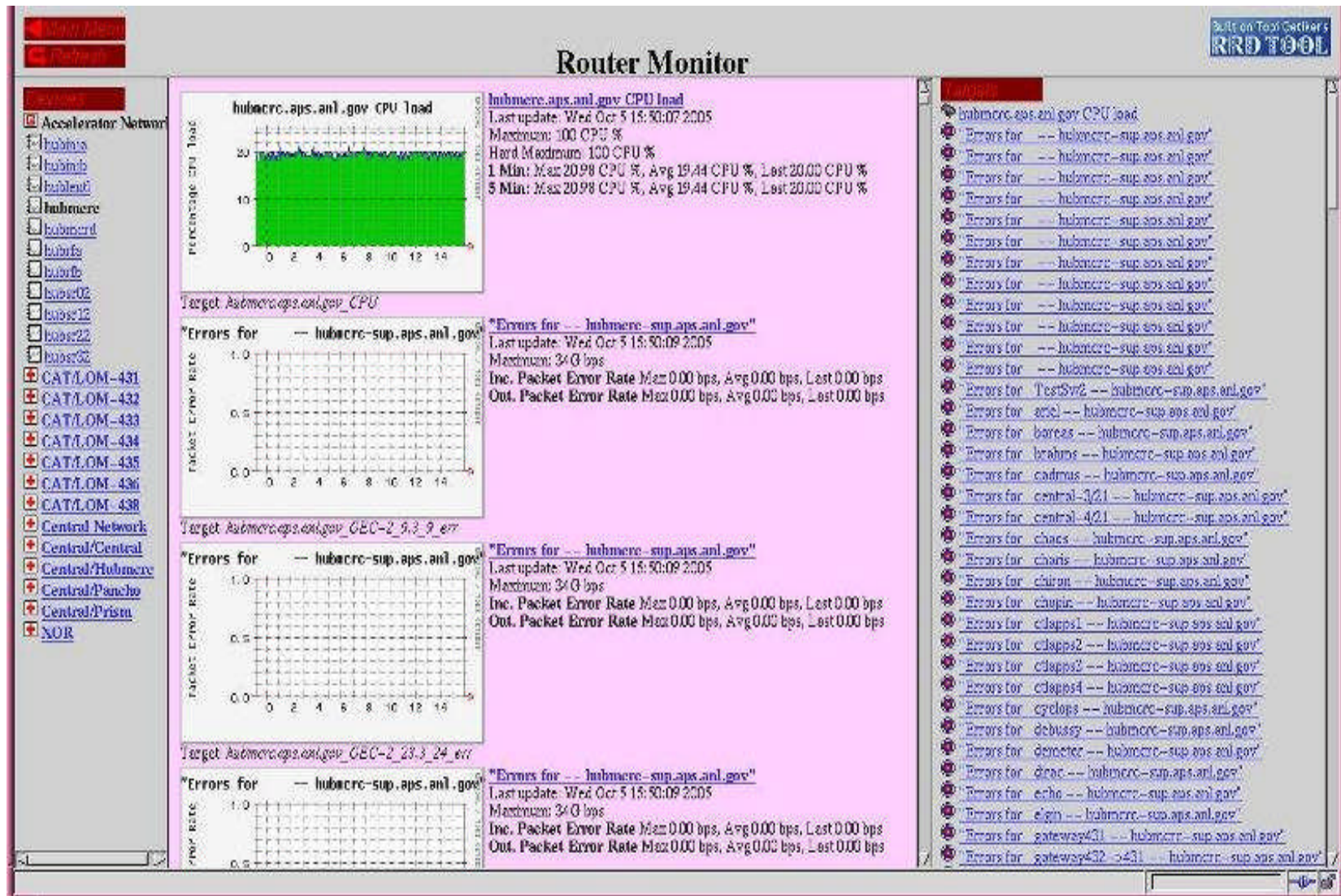
CPU power Disk Network TCP/IP stack NFS RPC client Swap space RAM demand
 Kernel memory Kernel contention DNLC Inode cache

| | | | | | | | | |
|-------------------|----------|-----------|----------|-----------|------|-----------|------|-----------|
| CPU power | Current: | 0.00 | Average: | 0.00 | Min: | 0.00 | Max: | 0.00 |
| Disk | Current: | 0.00 | Average: | 111.37 m | Min: | 0.00 m | Max: | 1000.00 m |
| Network | Current: | 666.67 m | Average: | 570.29 m | Min: | 0.00 m | Max: | 1333.33 m |
| TCP/IP stack | Current: | 1000.00 m | Average: | 1052.54 m | Min: | 1000.00 m | Max: | 1833.33 m |
| NFS RPC client | Current: | 0.00 m | Average: | 0.39 m | Min: | 0.00 m | Max: | 166.67 m |
| Swap space | Current: | 0.00 m | Average: | 0.00 m | Min: | 0.00 m | Max: | 0.00 m |
| RAM demand | Current: | 0.00 m | Average: | 0.00 m | Min: | 0.00 m | Max: | 0.00 m |
| Kernel memory | Current: | 0.00 m | Average: | 0.00 m | Min: | 0.00 m | Max: | 0.00 m |
| Kernel contention | Current: | 1000.00 m | Average: | 1001.97 m | Min: | 1000.00 m | Max: | 1333.33 m |
| DNLC | Current: | 1000.00 m | Average: | 1025.66 m | Min: | 1000.00 m | Max: | 1502.22 m |
| Inode cache | Current: | 0.00 m | Average: | 156.77 m | Min: | 0.00 m | Max: | 2000.00 m |

Last data entered at Wed Oct 5 14:05:00 2005.

Network Monitoring

- Without a network, the fastest computers are nearly useless.
- MRTG: Network monitoring system also used by IRMIS to monitor IOCs



LDAP for Authentication

- Simplified user access using LDAP.
- A defined standard
- Used for system access and application authentication.

LDAP Now

- OS access for Mac, Solaris
- Application Authentication for E-mail, APS Portal and ICMS

LDAP in the future

- OS access for Linux and Accelerator (Helios/Selene cluster)
- XOR beamline accounts

APS E-Mail System

- This infrastructure supports the APS Email system
- Centralized storage for users' email with multiple access methods.

APS Email Access

■ Internal:

- Secure IMAP (IMAPS) via Netscape/Mozilla/Thunderbird
- HTTPS via <https://atlas.aps.anl.gov:444/>

■ External:

- APS Portal

E-Mail has Evolved

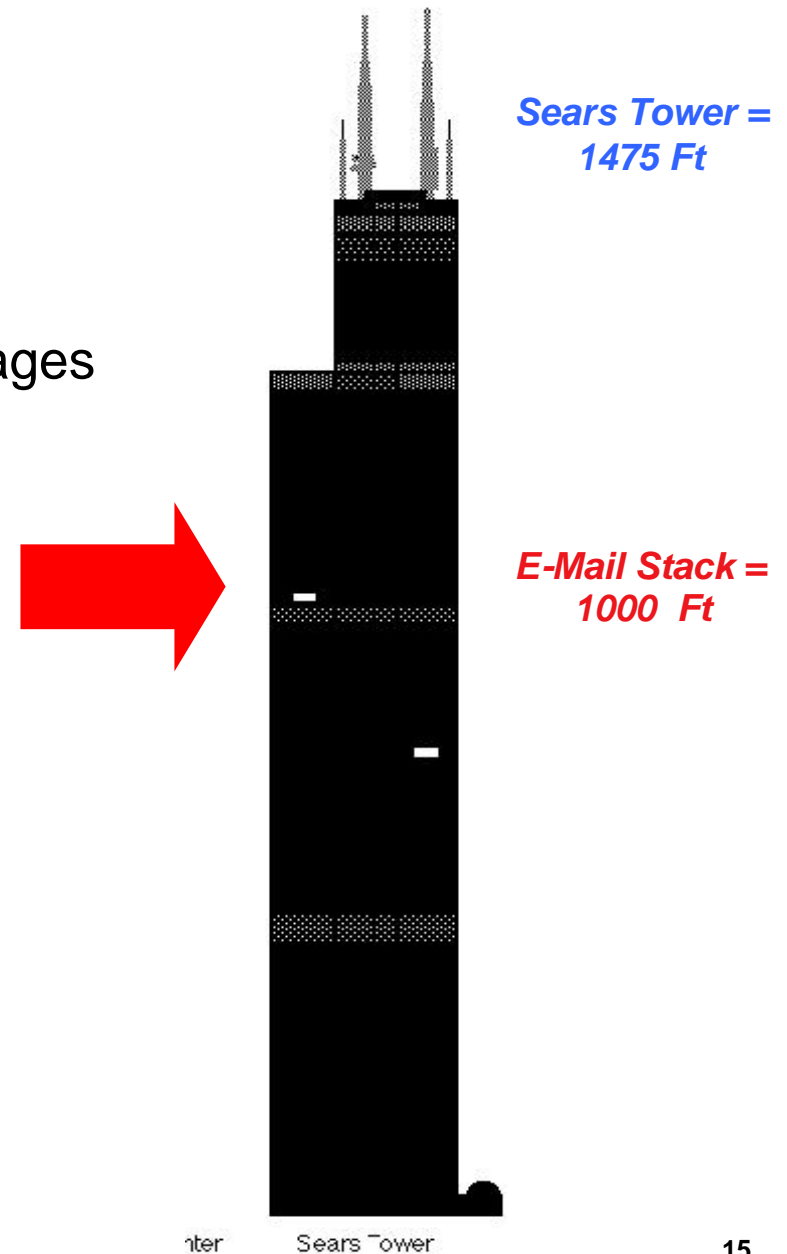
- Users have changed how they use Email
- Organizing messages into folders
- Saving messages to preserve chronological events

CATs are Requesting APS Mail Service

- Spam Filtering
- Lower Cost of Operation
- Allow CAT personnel to focus on Science.

How Much Mail?

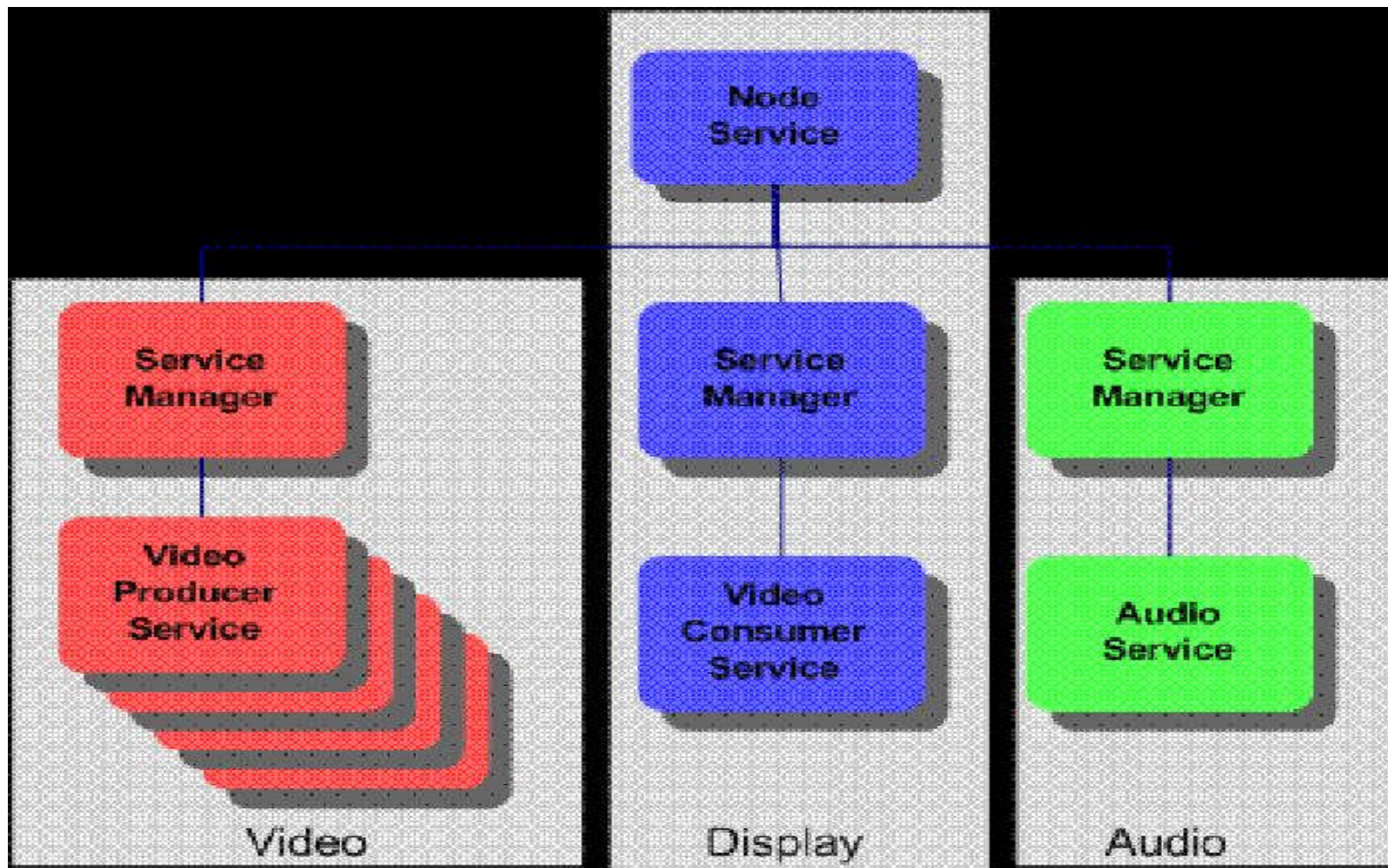
- 15,000 Messages per day
- 307GB total mail with 3.2 million messages
- Sears Tower 1475 feet
- E-Mail Stack 1000 ft



The Access Grid

- AccessGrid: The future of scientific collaboration
- software system to support group-to-group interactions.

The Access Grid



From: <http://www.accessgrid.org/>

Applications Actions Thu Oct 6, 10:53 AM

BM Beamline

| | |
|--|---|
| | bmc93(Video1) staff@bmc93.ser.aps.anl.gov 14 f/s 807 kb/s (0%) |
| | com28 Office W2K(Video) sercat@anl.gov 17 f/s 25 kb/s (0%) |
| | UGA Workstation(Video) vbabson@uga.edu 24 f/s 51 kb/s (0%) |
| | John P. Rose(Video) rose@bcl4.bmb.uga.edu 5.7 f/s 22 kb/s (0%) |

VIC v2.8uc1-1.1.3-AG [Menu] [Autoplace] [Help] [Quit]

Venue Client

venue Preferences My Venues Help

<< Go

M Beamline

Exits <<

Conference Room

ID Beamline

SER-CAT Venue Server

Participants

- + John P. Rose
- + John Rose
- + Roger Sersted
- + UGA Workstation
- + com28 Office W2K

Data

- + Services
- + Application Sessions

Server! For more information see <http://www.accessgrid.org/> and <http://www.mcs.anl.gov/fl/research/accessgrid>.
- Entered venue BM Beamline (Thu, 06 Oct 2005, 10:52:56)

Display

Add your personal data to venue

09400HB2221_052620_05_012000T.pdf

05_012000T.pdf

polo_vw_.wmv

saverMac.hqx

AG Venue Client [APS Home Page - Mo] [SER-CAT AccessGrid] BM Beamline

The screenshot shows a Windows XP desktop environment. The taskbar at the top displays the system clock as 'Thu Oct 6, 11:03 AM'. The desktop background is dark blue with a grid pattern. Several icons are visible on the desktop, including a PDF file named '09400HB2221_052620_05_012000T.pdf', a video file 'polo_vw_.wmv', and a file named 'saverMac.hqx'. Two application windows are open:

- BM Beamline**: This window shows a live video feed of a beamline. The address bar indicates the connection is to 'staff@164.54.208.91'. The video shows a bright, glowing beam of light. A 'Quit' button is visible in the bottom right corner of the window.
- Venue Client**: This is a web-based application interface. The top navigation bar includes 'Venue', 'Preferences', 'My Venues', and 'Help'. The address bar shows the URL 'https://bmc90.ser.aps.anl.gov:8000/Venues/00'. The main content area is titled 'BM Beamline' and features a sidebar with 'Exits' (Conference Room, ID Beamline, SER-CAT Venue Server) and a list of 'Participants' (John P. Rose, John Rose, Roger Sersted, UGA Workstation, com28 Office W2K). Below the participants list are sections for 'Data', 'Services', and 'Application Sessions'. At the bottom of the window, a timestamp '11:01:20' is followed by the text 'SER-CAT Conference Room -- Entered venue BM Beamline (Thu, 06 Oct 2005, 11:03:...)'. A text input field and a button labeled 'Add your personal data to venue' are also present.

The taskbar at the bottom shows several open applications: '4G Venue Client', '[APS Home Page]', '[SER-CAT Acces]', 'BM Beamline', and 'staff@164.54.208'.



From: <http://www.sve.man.ac.uk/General/Gallery/AccessGrid/SCG01>

Who Uses AccessGrid ?

- 100 Venues listed on <http://portal.accessgrid.org/>
 - Ames Laboratory, Ames Laboratory/Iowa State University, Ames Argonne Workshop Node, Argonne National Laboratory, Chicago Argonne Library Node, Argonne National Library, Chicago Boston University SCV, Boston University, Boston LLNL-CASC, Lawrence Livermore National Laboratory, Livermore Los Alamos National Lab, Los Alamos National Lab, Los Alamos LSU Life Sciences A663 Node, Louisiana State University, Baton Rouge
 - SER CAT APS
 - Beamline XOR

Summary

- A well maintained infrastructure is vital to support Scientific systems and applications.
- Collaborative tools, such as E-mail and AccessGrid, provide scientists the means to exchange ideas and information.